

FIG. 1
PRIOR ART

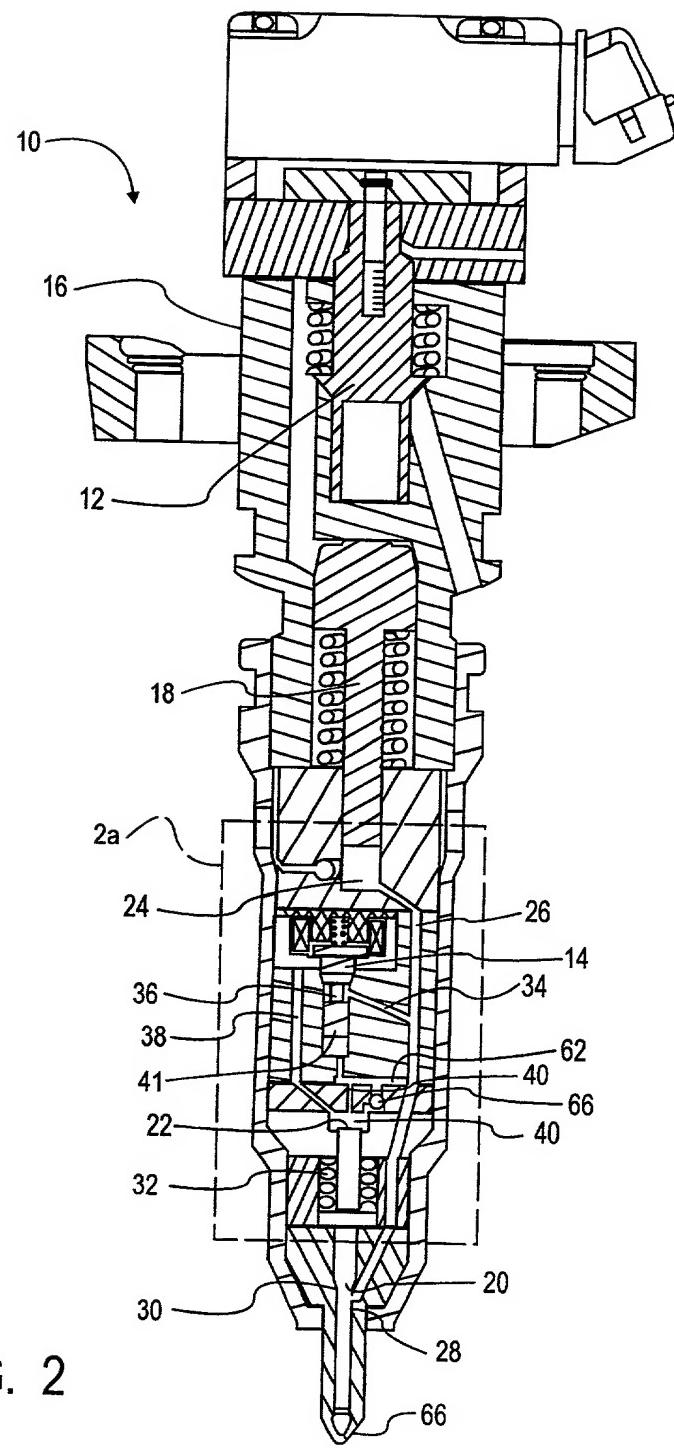


FIG. 2

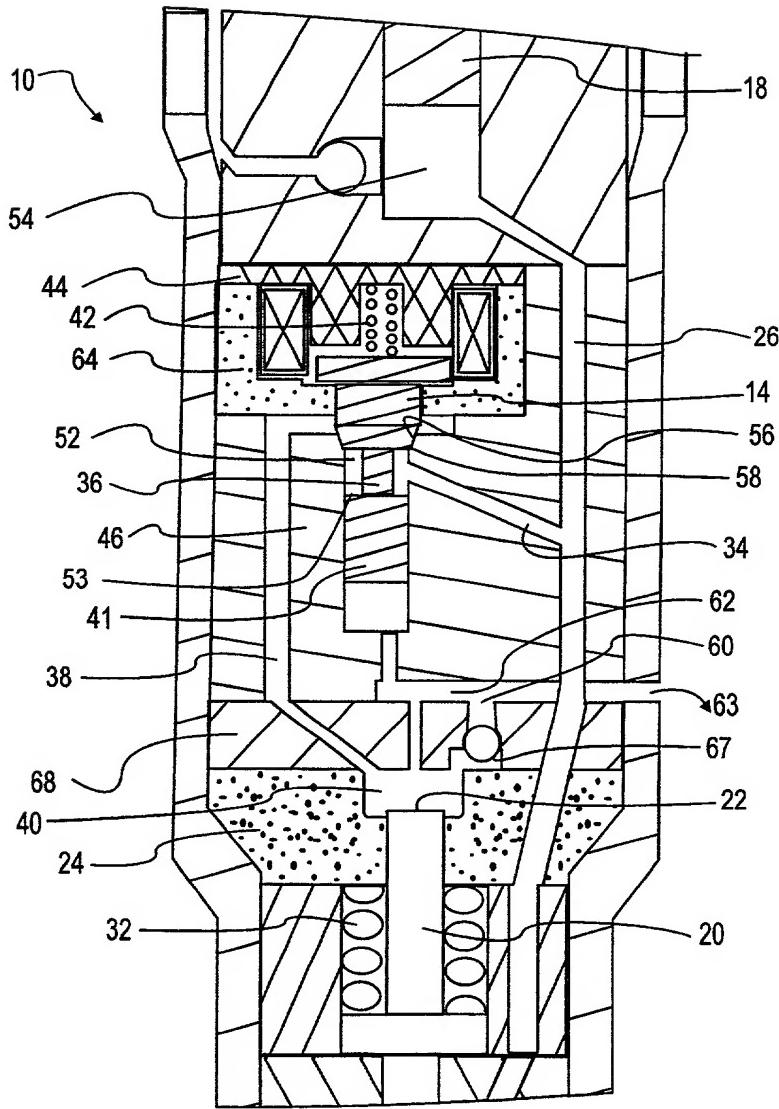


FIG. 2a

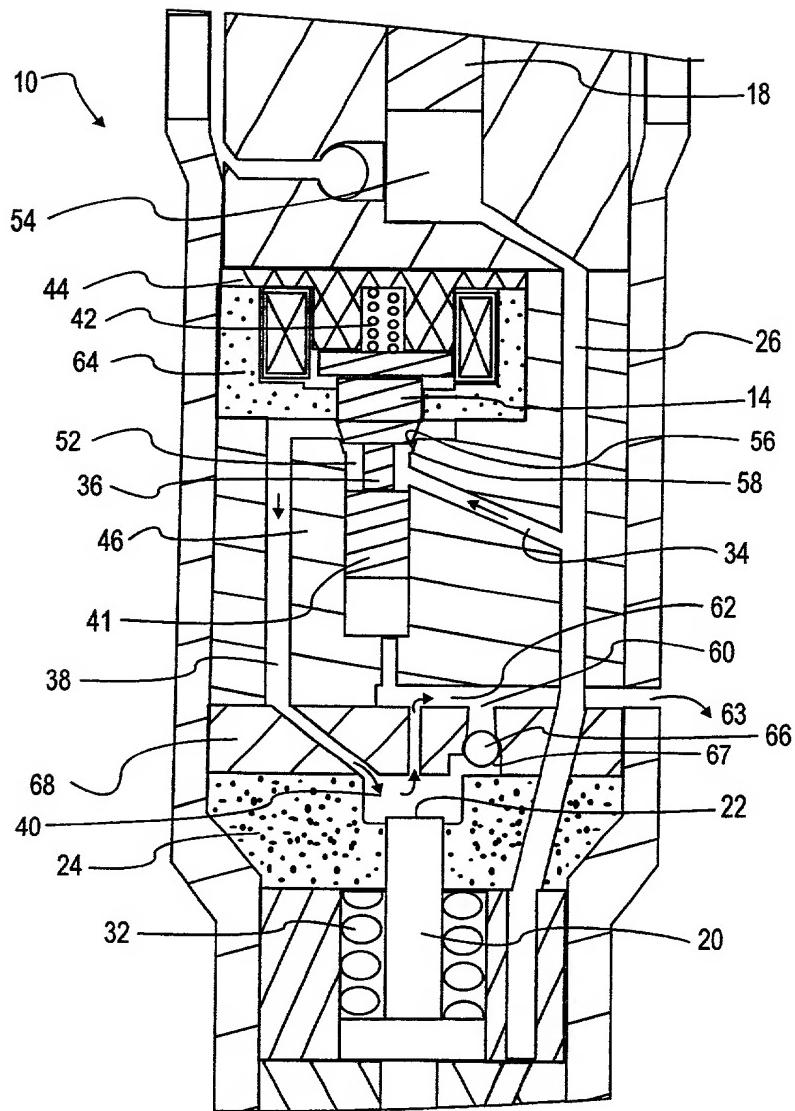


FIG. 2b

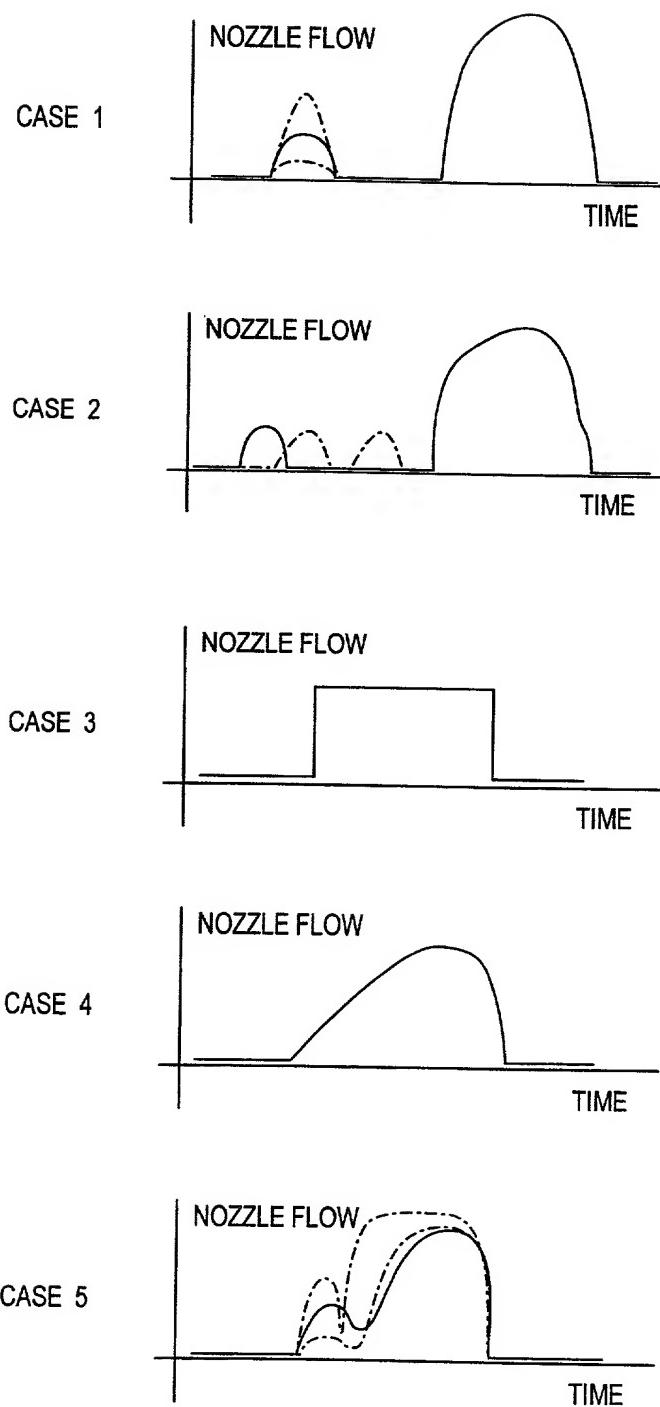
FIG. 3

FIG. 5

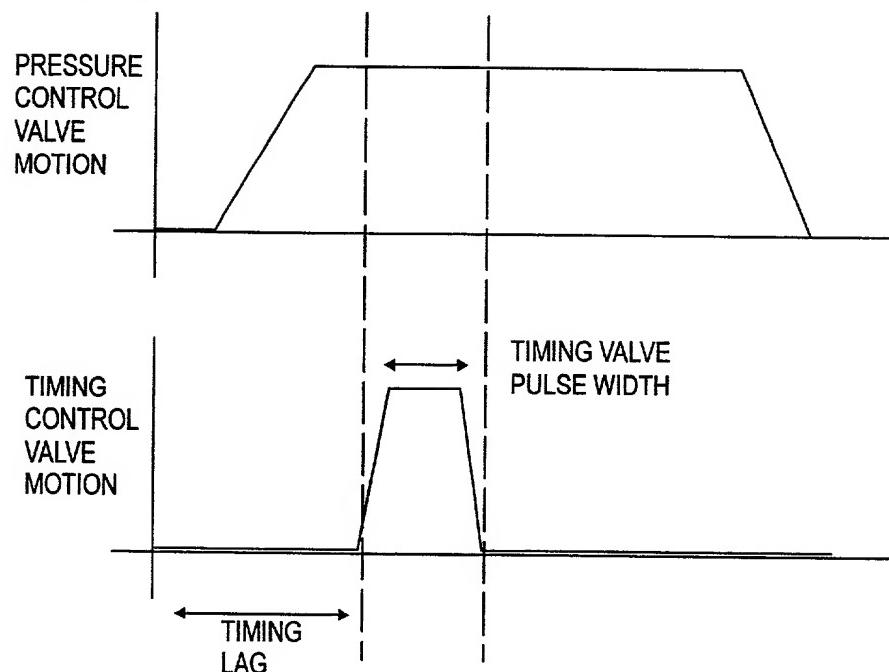
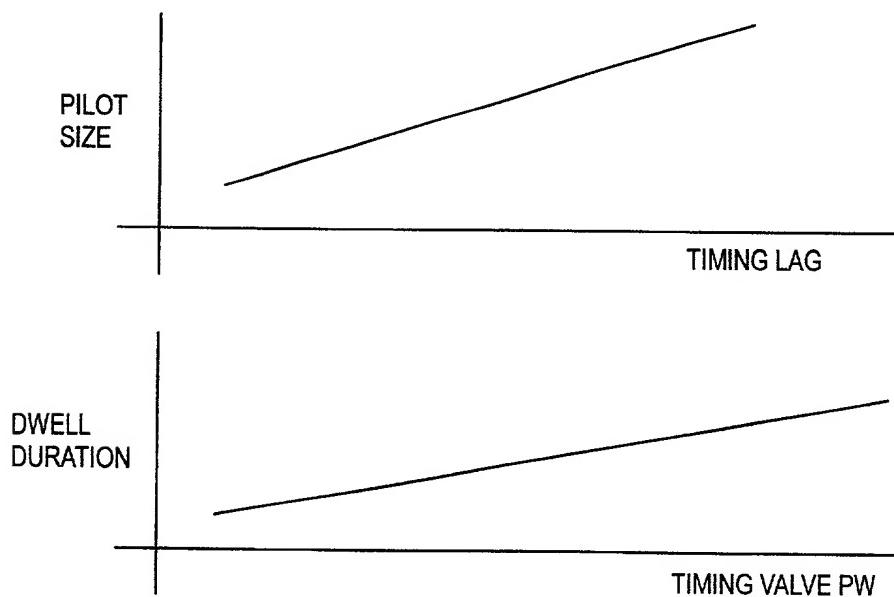


FIG. 6



Piezo Controlled Direct Needle Actuation

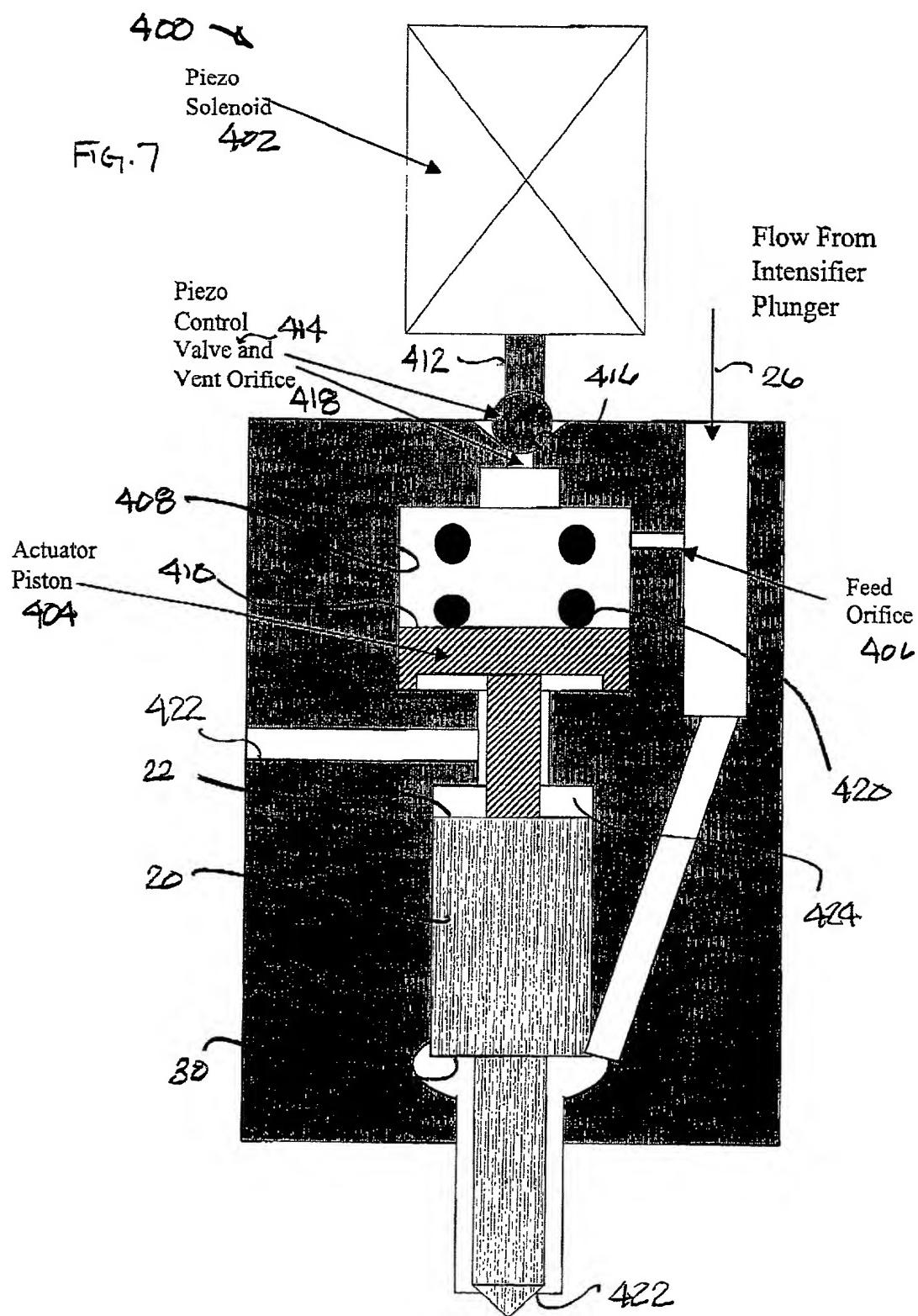
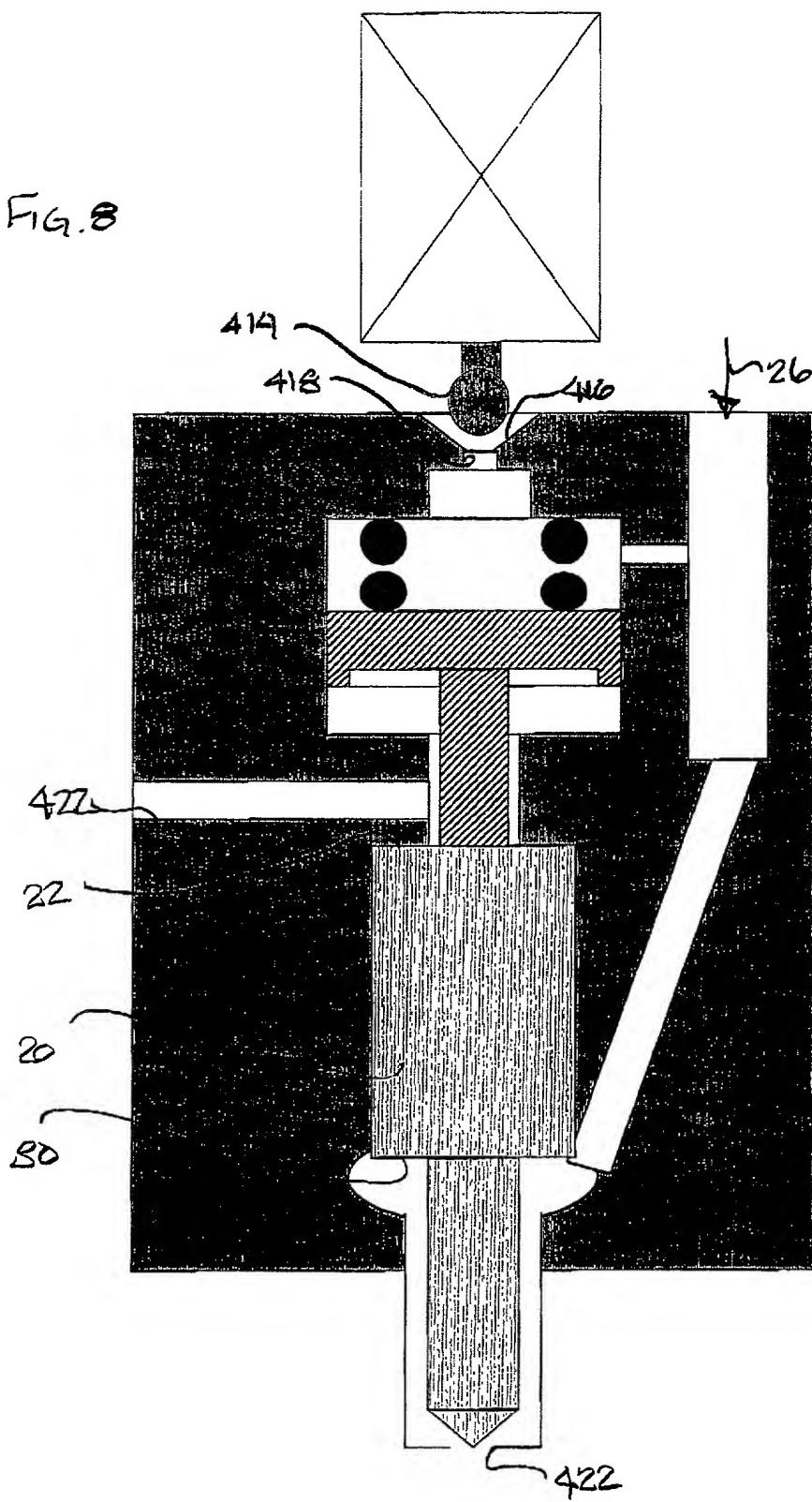


FIG. 8

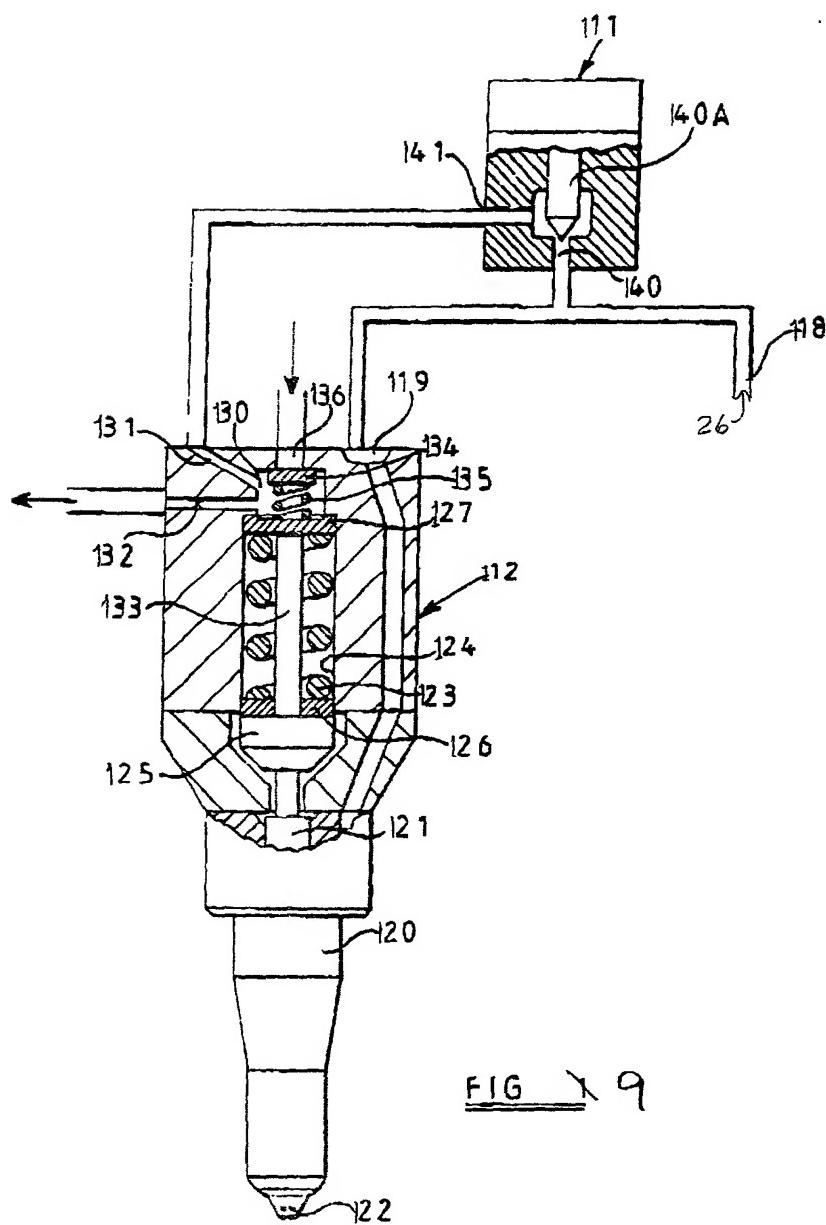


U.S. Patent

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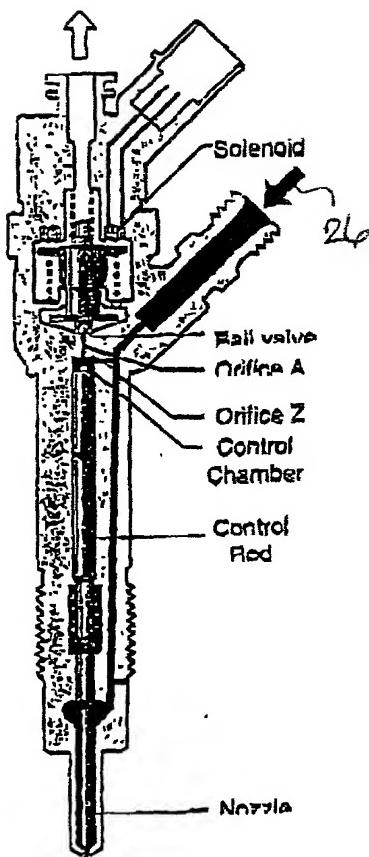


Fig. 10a

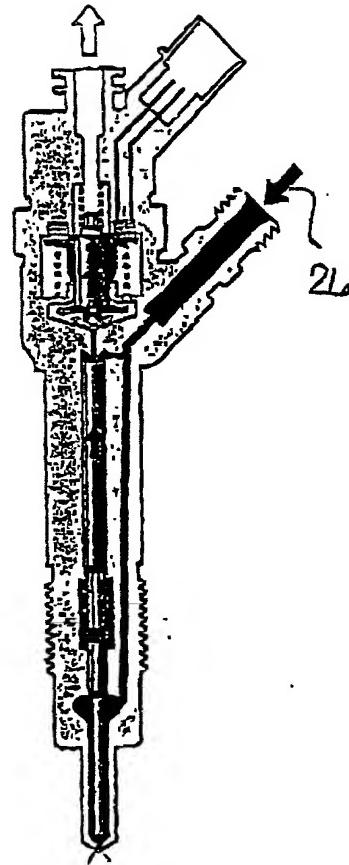


Fig. 10b